

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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DATE APR 12 1983

SUBJECT EPA Overview - FIT Field Investigations at the SAAD Site and the Buzzard Hollow Landfill, Nashville, Tennessee

FROM Engineering Support Branch

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W/D for

During the week of August 16-20, 1982 I was supposed to overview the FIT investigation at SAAD Oil Company and the FIT resampling of the Buzzard Hollow Landfill. Both sites are in Nashville, Tennessee. However, because of problems encountered with improperly cleaned well drilling equipment and equipment problems during the actual well installation at the SAAD site, no samples were collected at the Buzzard Hollow site. These problems consumed two and one half days before drilling could start.

FIT Team representatives present during the investigation at the SAAD site were Messrs. Charles Wilson, Roger Franklin, Cris Leggett, Frank Mills, and Dan Harmon. Mr. Harmon was assigned to supervise the installation of monitoring wells by Geo-Tek, Inc., a private well drilling contractor. Mr. Wilson was responsible for making certain that all well drilling equipment was properly cleaned so that it would not introduce contamination into the groundwater during drilling operations. Mr. Wilson and the remainder of the FIT Team representatives were responsible for all sample collection activities.

Initial plans for the well drilling operation at the SAAD site called for a preselected decontamination station. This station was to be used for washing the drilling equipment (auger stems, etc.) between the installation of wells. Geo-Tec, Inc., representatives were instructed to report to the decontamination station on August 17, 1982 with all of their equipment, including a water truck. This truck was to be used to furnish water for both decontamination of equipment and for the drilling mud during drilling operations. All equipment was to have been cleaned before reporting to the site.

When Geo-Tek, Inc., reported to the decontamination station, FIT Team representatives discovered that all of the in-ground drilling equipment would have to be cleaned thoroughly before starting the drilling operations. The auger stems were very rusty and caked with mud from prior usage. When the FIT Team representatives started to clean the auger stems they discovered a problem with the water truck. The water tank on the truck had been constructed from a large piece of metal pipe with metal plates welded over each end. One of the Geo-Tec representatives stated that he thought the tank had been used to haul gasoline at one time. Since gasoline related compounds were some of the contaminants under investigation at this site, it was felt that this was not a good water supply. To correct this problem, the decontamination station was moved to a new location near a city fire hydrant. The city water was used to clean the equipment and flush the water tank with three times its own volume of water.

Initial attempts at cleaning the auger stems were abandoned due to their condition. Heavy rust and, in some cases, clay nearly as hard as a rock prevented proper cleaning. FIT Team representatives decided to have all of the auger stems sand blasted before they attempted any further cleaning. On August 18, while the auger stems were being sand blasted, soil samples around the SAAD site were collected. On August 19, the auger stems and drilling equipment underwent standard cleaning. The standard cleaning of the auger stems other drilling equipment consisted of:

- o Scrubbing the outside with soapy water and swabbing out the insides with a mop and soapy water,
- o Rinsing with a high pressure fire hose,
- o Rinsing with acetone, and
- o Rinsing with milli-Q water.

At 12:30 p.m. on August 19, an attempt was made to start augering the first well. However, two additional trips to the decontamination station to clean miscellaneous pieces of equipment were necessary before they could start. When the soil augering had been completed and rock drilling was ready to start, the Geo-Tek representatives shut down the operation. They had to return to their office for a new water hose to use in supplying water for their drilling mud. When they started to actually drill into the rock they encountered further trouble with their equipment. The inner core tube of their drill would not allow water to reach the drill bit. They had to return to their office for a new piece of equipment before they could continue drilling. This piece of equipment had to then be cleaned at the decontamination station. The first ten foot rock core was removed from the hole at 5:30 p.m.

Shortly after Geo-Tek started drilling on August 20, a hydraulic oil line on the drill rig ruptured. All of the equipment, including the pre-cleaned drill stems and the pan containing the recirculating drilling mud, were sprayed with hydraulic oil. All of the drill stems had to be returned to the decontamination station for cleaning. The pan containing the drilling mud was drained, cleaned, and flushed several times to remove all traces of oil. After various other mechanical problems and the removal of nineteen additional feet of rock core, the Geo-Tek representatives again ceased drilling operations at about 1:45 p.m. He said that the drill rig he had on-site would not do the job required.

Observations, Problems, and Recommendations:

- o Mr. Wilson decided to obtain a sample of water from the tank truck after it had been flushed three times. He planned to submit this sample for the same analysis required on the well samples. This was a good quality control decision.
- o The 55 gallon drum of acetone furnished by Geo-Tek was labeled "Technical Grade - for industrial use only". A better grade of acetone should have been specified in the contract with Geo-Tek.
- o During the cleaning operations on the drilling equipment, some of the pieces of equipment which had been rinsed with acetone were subject to splash while other pieces were being rinsed with the fire hose.

The acetone rinsed pieces should have been segregated to prevent this.

- o Stainless steel garden sprayers were used to rinse the equipment with milli-Q water. However, the hoses of the sprayers were rubber. This hose should have been replaced with Teflon tubing.
- o A pre-cleaned stainless steel and teflon siphon pump was used to remove acetone from the 55 gallon drum. At nighttime, the pump was placed in the FIT van without any protection. It should have been wrapped in new aluminum foil to prevent contamination.
- o The drum of acetone was left on the edge of a cornfield at the decontamination station each night with no security. Anyone, including children, from the houses across the street could have had access to the acetone. The drum should have been locked or sealed in some way.
- o The site selection for the soil samples was good.
- o Disposable aluminum pans from the Environmental Services Division warehouse were used to collect and mix the soil samples. These were new pans which had not been cleaned by our standard cleaning procedure. The pans were transported in the FIT Team vehicle with no cover to protect them from dust. The sample bottles for each location were transported in the open pans from the vehicle to the sampling site. Only pre-cleaned pans should be used and they should be kept covered until they are ready to be used. They should not be used to transport bottles.
- o In future contracts with well drillers, FIT should exercise tighter controls over the type drilling equipment to be used. They should also specify in detail the type of cleaning each piece of equipment should undergo before it is delivered to the site. This would save a great ammount of time during the field operations.

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